

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Original) An apparatus comprising:

a plurality of segments each having a first wall and a second wall;

an integrated joint actuator assembly having a plurality of bellows-type actuators individually interconnecting at least a portion of said segments, each of said plurality of bellows-type actuators extending only between said first wall of a first of said plurality of segments and said second wall of a second of said plurality of segments;

a plurality of drive mechanisms operably coupled to each of said plurality of segments, said plurality of drive mechanisms generally disposed about a periphery of each of said plurality of segments to provide traction at any position about said periphery;

a power source; and

a power transmission system interconnecting said power source and said plurality of drive mechanisms to drive said plurality of drive mechanisms.

2. (Original) The apparatus according to Claim 1 wherein said plurality of drive mechanisms each comprises:

a plurality of leg mechanisms operably coupled to each of said plurality of segments, said plurality of leg mechanisms generally disposed about a periphery of each of said plurality of segments to provide traction at any position about said periphery.

3. (Original) The apparatus according to claim 1 wherein each of said plurality of segments is identical and interchangeable.

4. (Original) The apparatus according to claim 1, further comprising:
a head segment coupled to one of said plurality of segments; and
a controller mounted in said head segment, said controller controlling said plurality of drive mechanisms and said integrated joint actuator assembly.

5. (Original) The apparatus according to claim 1 wherein each of said integrated joint actuator assembly includes at least one degree of freedom and each of said degrees of freedom through actuation of at least one of the plurality of bellows-type actuators.

6. (Original) The apparatus according to claim 1 wherein said plurality of drive mechanisms each comprises:

a continuous drive track;

a drive gear operably coupled to said power transmission system;

a driven gear enmeshingly engaging said drive gear; and

a track gear fixed for rotation with said driven gear, said track gear enmeshingly engaging said continuous drive track to drive said continuous drive track to propel the apparatus.

7. (Original) The apparatus according to claim 1 wherein a pair of said plurality of drive mechanisms is disposed on each of four sides of each of said plurality of segments to provide traction at any position about said periphery.

8. (Original) The apparatus according to claim 1 wherein said plurality of bellows-type actuators of said integrated joint actuator assembly are individually actuatable to permit movement of one of said plurality of segments relative to an adjacent segment.

9. (Original) The apparatus according to claim 8 further comprising:
a controller for individually controlling each of said plurality of bellows-type actuators, said controller capable of generally maintaining a predetermined position and predetermined stiffness, and minimizing airflow.

10. (Currently Amended) An apparatus comprising:

- a plurality of segments;
- an integrated joint actuator assembly having a plurality of bellows-type actuators individually interconnecting at least ~~a portion~~ two of said segments;
- a plurality of drive mechanisms operably coupled to each of said plurality of segments, said plurality of drive mechanisms generally disposed about a periphery of each of said plurality of segments to provide traction at any position about said periphery;
- a power source;
- a power transmission system interconnecting said power source and said plurality of drive mechanisms to drive said plurality of drive mechanisms; and
- a controller for individually actuating each of said plurality of bellows-type actuators, said controller operable to maintain a desired position and a desired stiffness in said plurality of bellows-type actuators.

11. (Original) The apparatus according to Claim 10 wherein said plurality of drive mechanisms each comprises:

- a plurality of leg mechanisms operably coupled to each of said plurality of segments, said plurality of leg mechanisms generally disposed about a periphery of each of said plurality of segments to provide traction at any position about said periphery.

12. (Original) The apparatus according to claim 10 wherein each of said plurality of segments is identical and interchangeable.

13. (Original) The apparatus according to claim 10, further comprising:
a head segment coupled to one of said plurality of segments; and
a controller mounted in said head segment, said controller controlling said plurality of drive mechanisms and said integrated joint actuator assembly.

14. (Original) The apparatus according to claim 10 wherein each of said integrated joint actuator assembly includes at least one degree of freedom and each of said degrees of freedom through actuation of at least one of the plurality of bellows-type actuators.

15. (Original) The apparatus according to claim 10 wherein said plurality of drive mechanisms each comprises:

- a continuous drive track;
- a drive gear operably coupled to said power transmission system;
- a driven gear enmeshingly engaging said drive gear; and
- a track gear fixed for rotation with said driven gear, said track gear enmeshingly engaging said continuous drive track to drive said continuous drive track to propel the apparatus.

16. (Original) The apparatus according to claim 10 wherein a pair of said plurality of drive mechanisms is disposed on each of four sides of each of said plurality of segments to provide traction at any position about said periphery.